OREGON FLORA *Newsletter*

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Global Plants Initiative

by Troy Maddux and Aaron Liston

The Oregon State University Herbarium has joined the Global Plants Initiative, an international partnership of herbaria working to create a coordinated global database of information and images of plant specimens. With support from the Andrew W. Mellon Foundation, the OSU Herbarium has obtained a custom HerbScan machine and the resources to scan the 2,000-plus type specimens in the herbarium.

Type specimens are very important to plant taxonomists as the type is the physical representative and ultimate reference for every described species (or subspecific taxon).

Once described, type specimens will always represent that taxon unless lost or destroyed. Because they are so important, types are given special status in herbaria, along with extra protections to keep them safe. Once these important plant specimens are scanned they can easily be seen by botanists around the world. This is an opportunity that would be impossible for most researchers without the

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Photo: Linda Hardison

Troy Maddux scans a type specimen for the Global Plants Initiative project.

Writing the Poaceae Treatment for the *Flora of Oregon*

by Barbara L. Wilson, Carex Working Group

The Carex Working Group is thrilled and relieved. We have completed the grass treatment for the Oregon Flora Project!

Mystified that our work has taken more than a year, friends suggested that writing the grass treatment must be easy now that the *Flora of North America* (FNA) grass volumes have been published. We would reply that writing the Oregon grass treatment has not meant simply stripping all the non-Oregon grasses from the FNA treatment.

What did we actually do?

First, we sought to write a simple key to Oregon's grass genera. Early leads of the FNA key are intimidating, and grass keys from the *Jepson Manual* (JM) and *Vascular Plants of the Pacific Northwest* are workable but do not include all Oregon species. We started with the Jepson key and consulted FNA to add missing Oregon taxa.

Nick Otting and Richard Brainerd tested our key with all 299 Oregon grass species. Students in our grass identification mini-classes gave us their perspectives on the keys, causing us to tweak wording or rewrite sections. The final version of the key (number 23) is much different from the first.

For species within genera, we started with the key we liked best from FNA, JM, Hitchcock, or other sources. *Poa* expert Robert Soreng wrote a key to that complex genus. When there was no useful key for Oregon we wrote our own. Cindy Roché tested our draft keys, providing many helpful suggestions.

Writing our genus treatments was a multi-step process:

(1) I consulted floras or OFP's morphology database to write treatments for all species. Each treatment included a genus description, a key to species, species descriptions, and sometimes habitat, range, and discussion.

(2) Once first drafts for all species were completed, I worked through each genus, deciding where I might modify a key or description, write discussion sections, add habitat or range, or note problems needing further work.

(3) Nick and Richard then took over. They keyed every species, modified descriptions, provided habitat information, and wrote or rewrote summary discussions.

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Global Plants Initiative, continued from front page

online resources provided.

The Global Plants Initiative started as a regional project, the African Plants Initiative, after a 2003 meeting in Ethiopia where participants proposed a database of African type specimens online. Many of these specimens were housed in other countries and thus unavailable to the African botanists. The Mellon Foundation provided funding and by 2007, many of the African types were online. The success of this project led to its expansion to Latin America, and then globally in the past year. The OSU type specimens were previously photographed in 2005 in collaboration with the OSU Libraries, and the images are available via the OFP website and the OSU Libraries Digital Collection. However, these are at a relatively low resolution, and insufficient detail is present for precise taxonomic work.

The benefits of this project will be felt not just globally but locally as well. The high-resolution scanner is mounted in a specially designed frame which inverts the scanner, allowing the plant specimens to stay right-side up and maintain their integrity. In addition to scanning all of the type specimens housed at OSU (2,004 of them), the scanner system is being used in support of the Oregon Flora Project's goal to provide an online image of every taxon in the Oregon flora. When the scanner is not being used for these two important tasks it can provide data that visiting scientists can take home with them and use thereafter. So, whether it is for the botanist visiting Corvallis, the ongoing Oregon Flora Project work or botanists across the globe, this system will be a boon to botanical work for some time to come.

The *Oregon Flora Newsletter* is published two times a year by the Oregon Flora Project and the Oregon State University Herbarium.

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Erythronium oregonum logo and masthead designed by Tanya Harvey.

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The Consortium of Pacific Northwest Herbaria

by Linda Hardison

Herbaria are a cross between museum and research tool—precious, irreplaceable historical artifacts, as well as treasure troves of data that inform biologists, anthropologists, and plant enthusiasts. Providing researchers with access to the data available in specimens has typically required packing and mailing specimens to the scientist's institution. The shortcomings of this approach are clear—there is a monetary cost for the processing of a specimen loan, the lending herbarium is without a segment of their collection sometimes for years and— perhaps most significantly—the specimens are placed at risk of damage or loss.

Technology comes to the rescue in this situation as the increasing availability of high-resolution digital photography can be applied to generate images of herbarium specimens and make them available via the World Wide Web. There are two aspects to an effort like this—taking a photograph captures the visual information of the pressed plant specimen, as well as the label data. However, when the information from the label is also transcribed into a database, the result is a powerful resource—a searchable dataset.

Herbaria have organized into regional networks to accomplish this work. Oregon is part of the Consortium of Pacific Northwest Herbaria, which was initiated at the University of Washington in 2007. It encompasses the states and Canadian provinces of Oregon, Washington, Idaho, Montana, Alaska, British Columbia, and Yukon Territories. In 2010, four universities within the Consortium of Pacific Northwest Herbaria collaborated and received National Science Foundation funding to digitize ca. 2.5 million herbarium specimens throughout the Pacific Northwest. An important part of this is the inclusion of small herbaria, which often house specialized, regional collections. Researchers at the University of Washington Herbarium serve as the Consortium coordinators, maintaining the computer servers that host the website and consolidating the data provided by the participants. The images and label data gathered are thus presented collectively through the PNW Consortium portal. An important aspect of the project is that the data *as well as* the databases and software tools to maintain the information are available for the contributing herbarium's use and continued development.

See Consortium, page 4

Lithocarpus is Asian, *Notholithocarpus* is American

by Kenton L. Chambers

The tanoaks of California and southwestern Oregon are familiar to us as the only North American representatives of *Lithocarpus*, a genus with some 300 species in southern China and Indomalasia. This extreme geographical disjunction is usually explained as the remnant of more widespread ancestors of the genus, which were part of a broad-leaved evergreen forest that spread over North America and Asia in the Early Tertiary Period, tens of millions of years ago. Other often-cited examples, also in family Fagaceae, are the chinquapins of genus *Castanopsis*, whose supposed relatives number about 120 species distributed in tropical and subtropical Asia. However, big changes are happening in the taxonomy of these genera, due especially to newly understood DNA relationships ("molecular phylogenetics"). Our two *Castanopsis* species, for example, are now separated and renamed as the strictly North American genus *Chrysolepis*. This note is to report a similar change of name for the tanoak *Lithocarpus*, which significantly revises its hypothesized Southeast Asian affinities.

Photo: Keir Morse

Notholithocarpus densiflorus, *male catkins and single female nut with bur-like involucre.*

The former *Lithocarpus densiflorus* is hence to be known as *Notholithocarpus densiflorus*, with the tree and shrub forms having separate varietal status as var. *densiflorus* and var. *echinatus*. The fruits of this species are very acorn-like—a single nut in a scaly cup—and now we know, from its DNA, that it is indeed closely related to oaks (*Quercus*), being linked to them morphologically by this kind of fruit (Manos et al. 2008). An acorn-type of single-nut fruit is also found in Asian *Lithocarpus*, but according to the new molecular phylogeny of Fagaceae, this is a case of parallel evolution from a long-ago ancestor having 2 or 3 nuts surrounded by bur-like bracts (as in *Chrysolepis*). The complex evolution of nuts, burs, and cupules in the female inflorescences of Fagaceae is discussed by Oh and Manos (2008), in support of their new molecular phylogeny of the family. The change from clusters of several nuts to single nuts in Fagaceae has occurred separately at least 5 times, by reduction in number of female flowers in the inflorescence. Spiny bracts (burs) have evolved 3 or more times (e.g. in *Castanea*, *Chrysolepis* and *Castanopsis*).

The new DNA-based phylogeny, which is now quite firmly established, still provides ancient Asian connections for our North American *Notholithocarpus* and *Chrysolepis*, but the pattern is not as previously believed. American *Chrysolepis* species (formerly *Castanopsis chrysophylla* and *C. sempervirens*) are instead more closely related to *Lithocarpus*. Further, the paired genera *Quercus* and *Notholithocarpus* are related to Asian *Castanopsis* and to the circumpolar genus *Castanea* (chestnuts), not to Asian *Lithocarpus*. These connections date back to the Tertiary Period (Manos & Stanford 2001), as we thought. The beech family Fagaceae is well represented in the fossil record through preservation of its distinctive nuts and cupules, staminate catkins, and pollen. Fossils from the early Eocene Period (56 million years ago) from North America provide good examples of evergreen, warm-climate genera like *Castanopsis* now limited to Southeast Asia. Fruits and leaves of *Quercus* from later in this Period represent the somewhat more temperate forests seen in the Clarno "nut beds" of central Oregon. The connection of *Notholithocarpus* with its Asian relatives probably dates from the Early Eocene, when warm climates worldwide favored the spread of subtropical forests throughout the Northern Hemisphere.

References

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Manos, P.S. and A. M. Stanford. 2001. The historical biogeography of Fagaceae: Tracking the tertiary history of temperate and subtropical forests of the Northern Hemisphere. *International Journal of Plant Sciences* 162: S77-S93.

Oh, S.-H. and P. S. Manos. 2008. Molecular phylogenetics and cupule evolution in Fagaceae as inferred from nuclear *CRABS CLAW* sequences. *Taxon* 57: 434-451.

Correction

In the paper-published issue of *OFN* Volume 16 Number 1, Figure 2 was incorrectly included in the illustration accompanying Gerald Carr's article "Focus on *Bensoniella oregona*". The legend correctly describes the two illustrations labeled "1" and "3," with the addition of "S=sepals". The online, color version of this issue (*http://www.oregonflora.org/ofn/OFNv16n1.pdf*) has been corrected.

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Consortium, continued from page 2

How does one gather information from 2.5 million specimens housed in more than a dozen different locations, and present it in a unified manner? The first step entails assembling the existing data. Several institutions entered the Consortium with their specimens already databased and/or imaged. For example, the Oregon Flora Project provided Oregon specimen data presented in its Oregon Plant Atlas; these include the OSU Herbaria as well as additional small collections. The Oregon collections being databased through the grant are at Reed College, Linfield College, H.J. Andrews Experimental Forest, Portland State University, and Southern Oregon University.

The second step, gathering new data from multiple institutions, has been addressed by going to the sources. Regional coordinators at Oregon State University (OSU), the University of Washington, and the University of Idaho have assembled portable imaging systems—a high-resolution digital camera and customized light box connected to a laptop computer—which are taken to the participating institution. The system is set up in the herbarium, local workers are trained, and the contents of the herbarium are photographed. Herbaria are encouraged to digitize all specimens within their collections, even those not from the PNW region, as a way to maximize the usefulness of the imaging system.

The next step entails capturing the specimen label data in a database. This is a centralized effort using teams of data entry workers at OSU and the University of Washington. The student workers become acquainted with the plants of the Pacific Northwest as well as herbarium practices. Lin Gu, an OSU student, says of his work experience: "The habitat and location of each specimen familiarizes me with collection sites, even though I haven't been to those places. I know that it's possible to find new species among herbarium specimens, so it is important to preserve specimens and their information well. I also feel a great responsibility to enter data as accurately as possible."

The final step is consolidating the information for presentation online. Ben Legler, the project informatics specialist, is creating tools for the public to access the data as well as a Web-based data entry system that can be used by the small institutions to maintain their database and enter future collections directly into the portal database.

The Pacific Northwest is not alone in its efforts to present herbarium collections data online—there are twelve similar networks throughout the country. The United States Virtual Herbarium was created in 2004 as an alliance of these networks and other herbaria with a mission "...to provide, using digital technologies, integrated access to all the nation's plant specimen information by the year 2020." Through the US Virtual Herbarium, participants connect and share expertise that will increase the availability and accessibility of plant collections information.

The importance of herbaria today is as real as it was centuries ago, when a personal visit to the herbarium cabinets was the only way to view a specimen. With the ability to digitally capture specimens and their information, the riches within herbaria can be both preserved and shared with the world.

Websites:

Consortium of Pacific Northwest Herbaria:
http://www.pnwherbaria.org
United States Virtuai Herbarium:
http://usvirtualherbarium.org

Photo: Linda Hardison

There are almost always several students databasing specimens in the OSU Herbarium for the PNW Consortium. From left to right: Tamra Prior, Katrina Isch, Sierra Grunwald, Erica Nuth, and Megan Lamb.

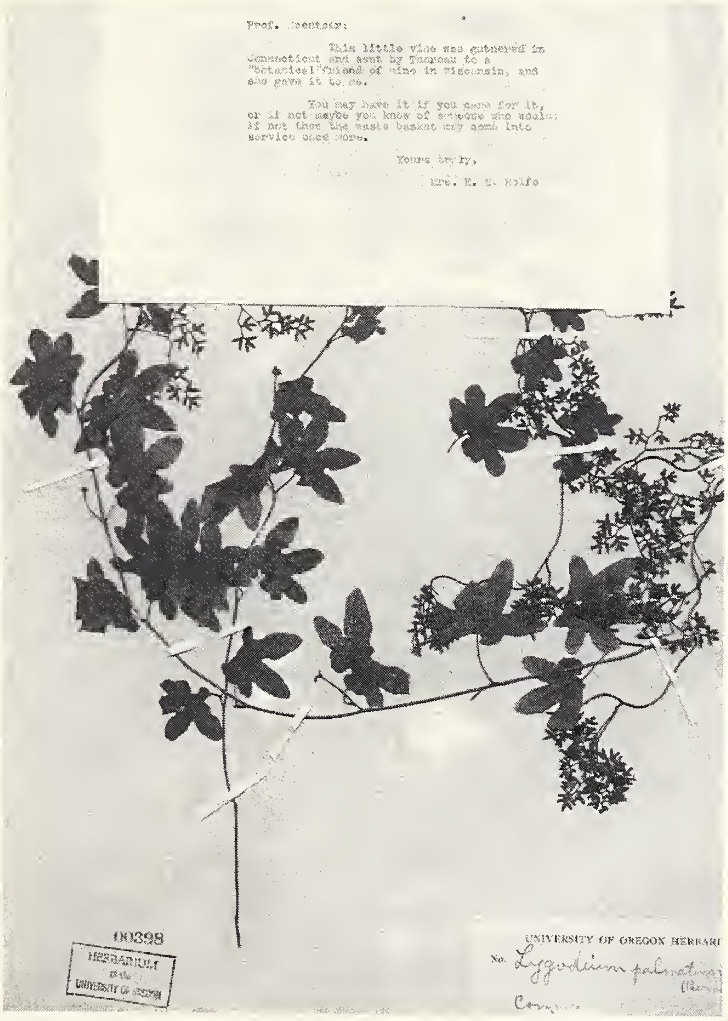
Curiosities within the OSU Herbarium

by Stephen Meyers

I don't recall the exact reason I was looking through the Oregon State University Herbarium's out-of-state collections of the fern *Lygodium* last year. However, as I was examining the specimens, one in particular (*Lygodium palmatum*) caught my eye. While at first the specimen appeared to be yet another "old" and relatively unassuming collection (one of many OSU inherited from the University of Oregon Herbarium in 1993), an unusual name was listed as the collector. In Albert Sweetser's handwriting was written: "Coll. Thoreau".

Like many, I have long been familiar with Henry David Thoreau (1817 – 1872) as a writer and naturalist, but as a botanist? Unknown to me at the time, I have since learned that Thoreau was not only an adept botanist, but also a prolific collector.

According to collections Thoreau made, it appears his interest in botany began around 1850. (Perhaps not coincidentally the first edition of Asa Gray's *Manual of Botany* was published in 1848.) This interest continued until his death, by which time his personal herbarium contained over 900 pressed, dried and labeled specimens. The bulk of Thoreau's collection is now housed at Harvard University.



Prof. Sweetser:

This little vine was gathered in Connecticut and sent by Thoreau to a "botanical" friend of mine in Wisconsin, and she gave it to me.

You may have it if you care for it, or if not maybe you know of someone who would; if not then the waste basket may come into service once more.

Yours truly,

Mrs. E. S. Rolfe

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HERBARIUM of the UNIVERSITY OF OREGON
UNIVERSITY OF OREGON HERBARI
No. Lygodium palmatum
Conn.

Photo: Stephen Meyers

A Henry David Thoreau specimen (Lygodium palmatum) *discovered in the OSU Herbarium.*

Conceding that the herbarium specimen I found does not have a label written by Thoreau, what evidence do we have that it was actually collected by Henry David Thoreau, and not by another botanist with the same surname? Clues lie in Thoreau's journal. While surveying in Concord Massachusetts, in 1851, Thoreau came upon an unusual and rare fern in New England, about which he noted: "It is a most beautiful slender and delicate fern, twining like [a] vine about the stem of the meadow-sweet, panicled andromeda [sic], goldenrods, etc., to the height of three feet or more, and difficult to detach from them...Our most beautiful fern, and most suitable for wreaths or garlands. It is rare."

The plant appears to have become of great interest to Thoreau and he not only mentioned it thirteen more times in his journal (referring to either "lygodium" or "tree fern") but also included the location of the Concord population (marked "lygodium") on his botanical survey map of the area. Additionally, Thoreau frequently mentioned the fern in correspondence with other naturalists.

Lygodium palmatum, an eastern North American species, is generally rare and local, except on the Cumberland Plateau in Kentucky and Tennessee. In New England this species was, and is, very infrequently found. Due to the rarity of *L. palmatum*, as well as Thoreau's great interest and his *de facto* local status as an "expert" on the species, it seems entirely plausible that the U of O specimen was, in fact, collected by Henry David.

Yet how did this specimen come to Oregon? Here, a note attached to the specimen gives some tantalizing but cryptic hints. The note mentions that Thoreau collected the specimen in Connecticut. It was subsequently passed on to a Mrs. E. S. Rolfe who in turn sent it to Albert Sweetser (who established the University of Oregon Herbarium in 1903 and served as curator until 1923).

Assuming that Thoreau collected the specimen between 1851 and 1872, only to have it resurface again on the opposite coast of the United States in the early 20th century, is assuredly remarkable and lucky. The Oregon botanical community should consider itself fortunate to possess such a specimen, not only of a very rare species, but also collected by an iconic American writer. Additionally, that same gratitude should be extended to Albert Sweetser who did not heed the latter advice of Mrs. Rolfe, who in her note to Sweetser mentioned (referring to the specimen): "You may have it if you care for it...if not then the waste basket may come into service once more."

References

Angelo, R. 1985. Thoreau as Botanist: An Appreciation and a Critique. *Arnoldia* 45: 13-23.

Angelo, R. 1985. Thoreau's Climbing Fern Rediscovered. *Arnoldia* 45: 24-26.

Project News

by Linda Hardison

Progress on the new *Flora of Oregon* continues to be a priority for the Oregon Flora Project. The list of completed families available on our website (*www.oregonflora.org/flora.php*) now includes the gymnosperms, Acoraceae, Ericaceae, Iridaceae, Limnanthaceae, Nyctaginaceae, Papaveraceae, and Styracaceae. As our lead article by Barbara Wilson indicates, the Poaceae will soon be completed and available to the public. Rena Schlachter is completing the illustrations for the Ericaceae which, with the floristic treatment, will be paper published as a useful reference and example of the style of the upcoming *Flora*. For all the floristic treatments, we encourage readers to use the keys and give us feedback; your input will help the OFP create a better plant identification resource.

It is said that experience is the best teacher. In March I had the good fortune to visit with the staff of the Flora of North America Association in St. Louis, MO. Their experience in producing a 30-volume flora for the continent has generated a knowledge base that is unsurpassed, and their graciousness in sharing with the OFP some of that knowledge of organizing, editing, illustrating, and publishing a flora is greatly appreciated.

The migration of our website to our new host COSINe (College of Science Information Network) is now complete. Lee Hughes, COSINe Web Developer, facilitated the transition and serves as our contact. Thank you, Lee! We continue to work with him in improving the flow of information between our working databases and the online tools that communicate those data.

The Flora Project indicates in the Checklist whether each plant in Oregon is considered native or exotic. We are working now to expand the details about exotic species in Oregon. Staff member Thea Cook began this project by designating a list of fifteen subcategories of exotic status that can be used to more precisely define how and why an exotic species is part of our state flora. Examples of these categories include ‘vegetatively spread,’ ‘recent waif,’ ‘noxious weed,’ and ‘persisting from cultivation.’ OFP student worker (and recent Botany Department graduate) Katrina Isch has taken on this research project. Developing an exotic status for each non-native taxon will provide important information that can influence how agencies manage certain species, and will synthesize information about exotic and invasive species from diverse and disparate sources.

The name Sherry Pittam is probably familiar to many friends of the Oregon Flora Project—Sherry was the lead person in our collaborative grant with NACSE to develop a Digital Field Guide, and was key in developing a web presence for the OFP. She retired from her university position in February 2011, and, after a short hiatus, is again on board with the OFP as a volunteer to continue development of the multiple entry key. We are fortunate to have her continued expertise—thanks, Sherry!

Volunteers, colleagues, and financial supporters are the glue that holds the Oregon Flora Project together. We are extremely grateful for the myriad contributions from all. In June 2011, we received a grant from the Bureau of Land Management in continuing support of the OFP mission. Other sustaining supporters include the John and Betty Soreng Environmental Fund of the Oregon Community Foundation, the Native Plant Society of Oregon, and the many individual donors who contribute regularly. We also receive administrative support from the Agricultural Research Foundation and the Botany Department at Oregon State University. Each of these collectively helps create our vibrant program, and makes it a resource that is accessible to everyone. We value your participation and contributions.

Poaceae, continued from front page

Photo courtesy of Barbara Wilson

Dr. Barbara Wilson

(4) Finally we rewrote and retested until we were satisfied.

We found that published information was usually accurate, but not always. Perhaps *Flora of North America* reported awn length to be 8-15 mm, but we found some 20 mm long. Maybe the lemmas are longer elsewhere, so FNA reports them to be 5-10 mm long, but Oregon’s longest are 8 mm long. Lemmas of *Festuca subulata* are reported to be “glabrous, sometimes sparsely scabrous” but occasional Oregon specimens have hairy lemmas. We found *Cynosurus echinatus* and *Scribneria bolanderi* individuals nearly twice as tall as reported in FNA. We corrected a flaw in the FNA key to wheatgrass genera.

We annotated more than 900 herbarium specimens from the combined herbaria at OSU. Some annotations confirmed identities; others corrected errors. We were able to remove taxa from the Oregon checklist (e.g. *Achnatherum occidentalis* ssp. *occidentalis*, *Festuca minutiflora, Hesperostipa comata* ssp. *intermedia*, *Podagrostis aequivalvis*, and *Thinopyrum junceum*). We added others such as *Agropyron fragile* and *Thinopyrum pycnanthum*.

Most of our range information came from the Oregon Flora Project Plant Atlas. When Atlas mapped seemingly out-of-range records, we examined the voucher specimens if possible, reporting apparently erroneous records to the Oregon Flora Project for correction.

We also made taxonomic judgments. We chose to recognize mountain brome, often called *Bromus marginatus*, as a subspecies of *B. carinatus*. FNA recognizes subspecies or varieties of *Bromus hordeaceus*, *Deschampsia cespitosa*, and *Vulpia octoflora*, but they are not distinct in Oregon;

we omitted them. However, we tentatively recognized the controversial subspecies of *Thinopyrum intermedium* and *Muhlenbergia mexicana*.

Calamagrostis gave us trouble. The *Flora of North America* key looks simple, but the traits are surprisingly hard to interpret. We rewrote the key in major ways. By comparing specimens, we learned that many Oregon specimens were misidentified. By the end, the ranges of most Oregon *Calamagrostis* species were radically reduced, and the description for *C. tacomensis* was significantly modified.

We fought our computers. Faced with spell-checking technical terms for grass morphology, Microsoft Word offered to import French and Portugese dictionaries! (Richard's computer preferred Italian.) We refused on the grounds that the treatments were English and we could teach the software how to spell culm, panicle, spikelet, glume, and others.

At last we were done. We had written treatments for Oregon's 299 grass species. (Except *Poa* – we were still working on *Poa*). Time to celebrate! We submitted our treatment to the Oregon Flora Project, but OFP reminded us that we must use the Flora Project template, so we went back and reformatted our treatments. We tried to shorten descriptions to the recommended 100 words, but that was difficult, especially in large genera. We cut *Elymus* descriptions over 25%, but they still averaged 175 words.

Near the end, one of us was inspired to include the most commonly occurring named wheatgrass hybrids. Nearly any two species of *Elymus, Hordeum, Leymus, Pascopyrum,* and *Pseudoroegneria* might cross if they grow together, and each hybrid is variable. We examined wheatgrass hybrids and I wrote a key that we hope will be helpful.

In February–joy of joys–we submitted all the treatments for Oregon grasses to the Oregon Flora Project Taxonomic Editor Stephen Meyers. Now Stephen will have the pleasure of reading 400+ pages of Oregon grasses!

How can I contribute?

Donations to the Oregon Flora Project are a critical part of our operating budget. Funds are routed to the OFP through the Agricultural Research Foundation (ARF). The ARF is a non-profit organization that raises funds to support scientific research and programs at OSU. All contributions are tax-deductible.

Your checks to the Oregon Flora Project can be made payable to the Agricultural Research Foundation. Please include "Oregon Flora Project—4482" on the memo line.

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With your contribution, please let us know if you do not wish your name listed in our newsletter "Thanks" column.

Thanks

We would like to acknowledge the volunteer help of the many individuals who provide data and images to the Oregon Flora Project, as well as those who contribute their time and talents. Special thanks go to recent volunteers Jeff Cook, Lin Gu, Rhoda Love, Troy Maddux, Gene Newcomb, Sherry Pittam, Tamra Prior, Rena Schlachter, Charlene Simpson, and Matthew Sundberg.

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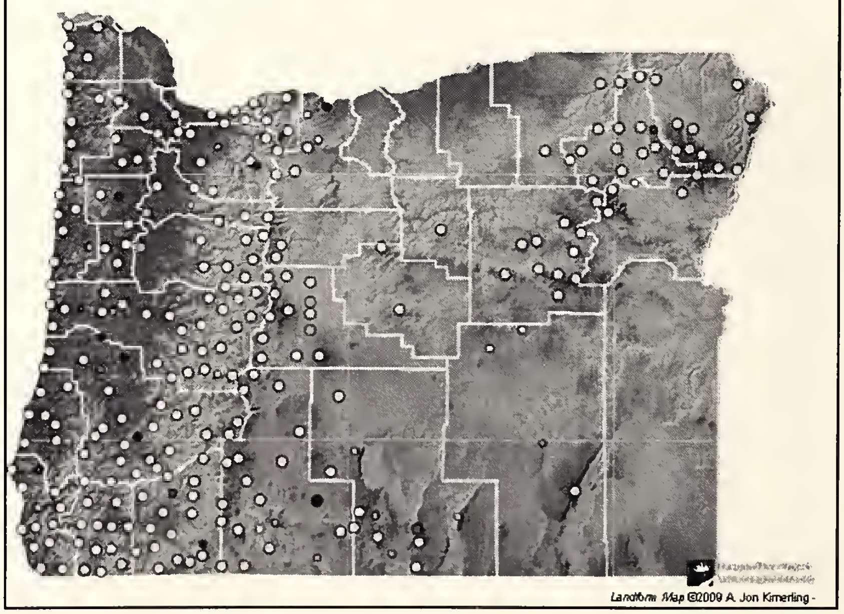
TIME DATED MAIL

Did you know?

- The Oregon Plant Atlas currently maps 4,122 specimens and 13,480 observations from the Ericaceae, or heath family. There are 32 genera and 65 species, subspecies and/or varieties within this family.
- The grass genus with the most taxa (44) is Poa; there are 38 established genera that have only one species occurring in Oregon.
- Tanoak (*Notholipocarpus*) shares the same family as oak trees—the Fagaceae. Its tannin-rich bark was historically used for the tanning of leather. The nut kernels also contain large amounts of tannins and, though consumed by squirrels, are said to require extensive leaching to make them edible for humans.



Occurrences of plants in the family Ericaceae. Light-colored symbols indicate multiple records at that site; almost all of these have more than one taxon present.

OREGON FLORA *Newsletter*

Volume 17, Number 2 Oregon State University March 2012

Erigeron stanselliae is a newly described species from Southwestern Oregon

by Kenton L. Chambers and Charlene Simpson

In July, 2009, we were privileged to accompany Veva Stansell on a trip to the Coast Range, east of Gold Beach, Curry County, searching for an unusual *Erigeron* that she had first collected in 1982, at the McKinley Mine area of Signal Buttes. Attention had been called to this odd plant by two collections housed in the OSU Herbarium, Veva's and one by Walt Schroeder from Flycatcher Spring, near Red Flat on the north fork of the Pistol River. Chambers had assigned them the name *Erigeron eatonii* var. *plantagineus*, but their location, only ca. 12 km east of the ocean, is far west of the next known site for var. *plantagineus* in eastern Jackson County. When Dr. John Strother, the monographer of *Erigeron eatonii,* later examined them, he annotated them "not *E. eatonii,* perhaps *E. peregrinus* alliance near *E. cervinus*." So, for over 15 years, they sat in an "undetermined" folder in the herbarium, awaiting further study.

To break this impasse, Veva was asked to lead the above

See Erigeron stanselliae, *page 11*

Photo: Rhoda Love.

Veva Stansell (l) and co-author Charlene Simpson (r) in 2010.

The genus Cyclamen in Oregon

by Stephen C. Meyers

In October of 2011, in a quest not to waste what might be one of the last warm and sunny weekends of the year, I found myself botanizing in Beazell Memorial Forest, in Kings Valley, west of Corvallis. After a half hour of hiking into the forest, I came upon a small population of *Cyclamen* beside the trail. At that time, the sight of *Cyclamen* wasn't a great surprise to me. I had seen *Cyclamen* in gardens (as well as escaped nearby from said gardens) on countless occasions, and knew it wasn't a native species. Therefore, my initial reaction was "I haven't personally seen this genus this far from a garden, but I'm sure others have, and this isn't likely a particularly interesting discovery." As a result, I didn't collect a specimen, take a photograph or try to determine which species I had encountered.

A few weeks later I found myself swapping botany stories and discussing my *Cyclamen* find with my fellow Oregon Flora Project staff members Linda Hardison and Thea Cook. During that conversation, Thea mentioned that George Carroll, emeritus professor at the University of Oregon, had recently told her about an escaped population of *Cyclamen* later determined to be *C. hederifolium* in Eugene, and that he could provide us with a herbarium specimen. Again, thinking to myself that this wasn't a momentous discovery, I then casually examined the *Cyclamen* collection housed in the Oregon State University Herbarium and the records in the Oregon Flora Project database. Much to my surprise, I found that the OSU Herbarium contained only one *Cyclamen* specimen—*C. pupurascens*, collected by Dr. Barbara Wilson in Corvallis, 1997. Additionally, the OFP database contained no additional Oregon specimens from other herbaria, or any recorded observations.

In this same period, a discussion was started on the Native Plant Society of Oregon listserv (http://www.npsoregon.org/discussionlist.php), thanks to an initial post by Barbara Wilson. That discussion quickly garnered great attention and generated many thoughtful, intelligent and concerned questions. For example: Which species of *Cyclamen* are escaping in Oregon? How frequent and widespread are the escaped populations? What is the threat of the escaped populations to native species?

Obviously, the limited data we currently have concerning

See Cyclamen, *next page*

Cyclamen, *continued from front page*

Cyclamen cannot be used to definitively answer these questions, or to even speculate on answers. It is in cases such as this, however, that citizen scientists can contribute invaluable data. I therefore encourage you, our readers, to keep an eye to the ground in order to locate any escaped *Cyclamen* populations. If you locate a population, if possible, collect a specimen (including a cross section of the tuber). Make note of the exact location and obtain a GPS reading (Google Earth is a valuable and easily accessed resource for this). If a collection is not possible, identify the species and record the exact location. In either case, once you have obtained the necessary data and/or collection contact us at the Oregon Flora Project (*ofpflora@oregonflora.org*) so that we may record your observation or arrange for your specimen to be accessioned into the OSU Herbarium.

Once you locate a *Cyclamen* population, how will you identify it to species? If escaped populations continue to be recorded, in the future, this may result in keys being published to identify which species are present in North America. Currently, no published North American flora, past or present, provides a key to identifying *Cyclamen* to species level. In order to aid in species identification, I have written the following description and key, based on several European references (see below):

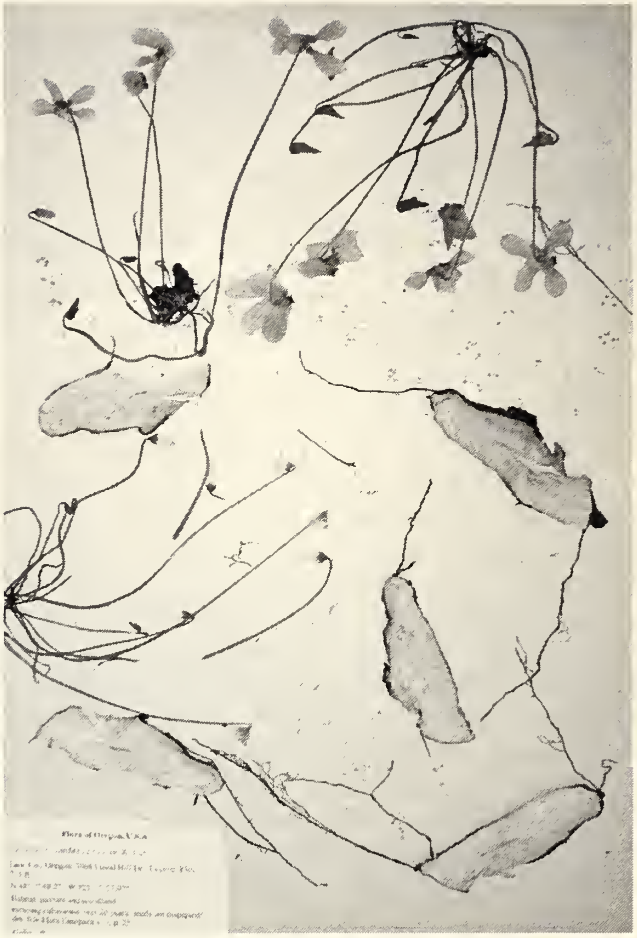


Photo: Stephen Meyers

Cyclamen hederifolium, *collected by George Carroll. Note the cross section of the tuber, which is crucial to identifying this specimen to species.*

Cyclamen is a member of the family Primulaceae. It is distinguished from other members of Primulaceae, known in Oregon, by its strongly reflexed petals and nodding flower stalks. While at first glance this genus might be confused with *Dodecatheon*, *Cyclamen* species do not have an exserted style and anthers; rather they are included or only slightly exserted from the corolla tube. Additionally, *Dodecatheon* species arise from fleshy, fibrous roots, whereas *Cyclamen* species grow from tubers ranging in diameter from a centimeter to over a decimeter.

The *Cyclamen* genus contains over 20 species, of which over 15 are cultivated. Native to the Mediterranean, North Africa and the Middle East, most species are not cold tolerant. However, 4 cultivated species, with some cold tolerance, have the potential to escape and thrive in Oregon. These are *C. cilicium*, *C. coem*, *C. hederifolium* and *C. purpurascens*. In many cases the chief character separating species is the morphology of the tuber. Therefore, unearthing and examining this structure is usually necessary for proper identification.

See Cyclamen, *page 14*

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Erythronium oregonum logo and masthead designed by Tanya Harvey.

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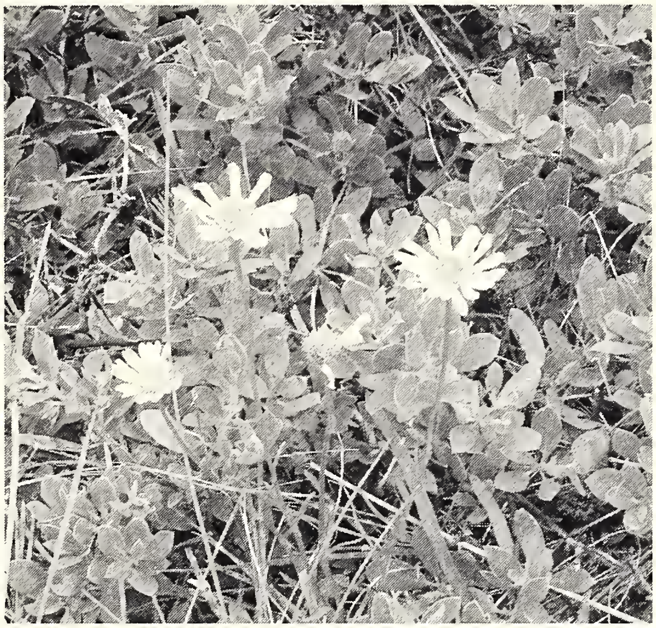
Erigeron stanselliae, *continued from front page*

authors, together with Dr. Henrietta Chambers, to Flycatcher Spring to search for a healthy population of *Erigeron* from which the full range of variability could be sampled. The habitat is a mixed woodland and shrub-land, on serpentine-derived soil. Trees include *Pinus jeffreyi, P. attenuata, P. monticola, Pseudotsuga menziesii,* and *Chamaecyparis lawsoniana,* while associated shrubs are *Arctostaphylos nevadensis, Quercus vaccinifolia, Garrya buxifolia, Juniperus communis,* and *Ceanothus pumilus.* The *Erigeron* plants occur in open areas on roadsides and grassy slopes, in gravelly, red-clay soil, and in loose mats of *Arctostaphylos nevadensis*, their flowering heads arising conspicuously on erect, leafless stems (see illustration). Plants in the open have short (7 cm), upward-curving stems, and those shaded by the manzanita are strictly upright, reaching 2.5 dm in height.



Erigeron stanselliae, *growing up through a mat of* Arctostaphylos nevadensis. *From the type locality in Curry County.*

Photo: Charlene Simpson.

A relationship with *Erigeron cervinus* was excluded on morphological and ecological grounds, but three species in Northwestern California seem to be related to the Flycatcher Spring plants, namely *E. lassenianus, E. robustus,* and *E. maniopotamicus.* Chambers borrowed specimens of these from the UC Berkeley herbarium and compared their most critical morphological characteristics. The heads of *E. robustus* are significantly larger and have more florets than the Oregon plants, which in addition have glandular hairs on the involucre not present in *E. robustus*. Glandular hairs are present in *E. lassenianus*, but its stems are leafier near the heads and are more densely stiff-hairy than our plants. The involucre of *E. maniopotamicus*, a species limited to Humboldt and Trinity Counties, lacks glandular hairs, its leaves are stiff-hairy to almost woolly, and it is absent from serpentine habitats. The leaves and stems of the Flycatcher Spring plants have only a few scattered hairs or are completely smooth, their stems lack leaves below the head (see illustration), and their known habitats are always on serpentine. Traits like those mentioned here are the key differences that separate closely related species belonging to the so-called *Erigeron eatonii*-complex, according to Dr. Strother.

Because of these morphological and ecological differences, plus the geographical separation from the three Californian relatives, the Oregon plants were judged to be a distinct, new species. It was formally published (Chambers 2011) with the name *Erigeron stanselliae*, in honor of Veva Stansell, who had discovered the species and who led us to the population from which the type specimen was collected.

The new species, with only two known localities, is very rare. A census needs to be made of the total number of plants, and searches should be done in other near-coastal serpentine habitats to expand its known range, if possible. It was a pleasure to name the species for Veva Stansell, a Fellow of the Native Plant Society of Oregon, whose vigorous field work over several decades has contributed so much to our knowledge of the floras of Southwestern Oregon and Northwestern California.

A native of Pistol River, Veva Stansell is a long-time student and enthusiast of Southwestern Oregon flora (Tipton 1997, Timm 2010). She was born on July 20, 1929 in Gold Beach. In 1936 her family moved to a farm on the south bank of Pistol River where, except for a time in Gold Beach, she lived until recently.

Veva has had a long-time association with the OSU Herbarium. She sent collected specimens for accessioning, corresponded about unusual finds, and provided plant lists for the Oregon Flora Atlas as a regional coordinator. Simpson recalls countless day excursions and camping trips with Veva spanning a period of 25 years. She considers Veva her mentor for Southwestern Oregon flora, highlighted by the trip to find the rare *Erigeron.* Another valuable botanical excursion led by Veva was to Low Divide Road in northwestern Del Norte County, in 2000, accompanied by the authors, Susan Kephart, and Henrietta Chambers. Our quarry was *Silene serpentinicola*, an endemic taxon of serpentines in Northwestern California and adjacent Oregon. A study of the collections of this "species" taken on our trip led eventually to the publication of a new nomenclatural combination, *S. hookeri* subsp. *serpentinicola* (Chambers and Meyers 2011).

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Oregon Flora's Inaugural Advisory Board has Formed!

by Lynda Boyer, Executive Secretary

The Oregon Flora Project Advisory Board met for the first time in September of 2011. The Advisory Board members were chosen because they broadly support the mission of the Oregon Flora Project. Their backgrounds match the diversity of users of the Flora: researchers, educators, ecologists, wildflower enthusiasts, and government agency workers (see table below). At our first meeting we learned how the Flora Project (OFP) came to fruition.

The board's strategic goals are to seek fresh and innovative ways to increase funding and to integrate new perspectives into the work conducted by OFP such as outreach to community and non-profit organizations, computer programming, web-based presentation of information and science writing and marketing. Of critical importance is securing adequate funding for the preparation and publication of the long awaited new *Flora of Oregon* by 2015.

At our first board meeting we were eager to learn the funding strategies used thus far. It is often challenging to navigate a tangled web to ensure compliance with the many grant requirements. Linda Hardison, OFP Director, candidly explained the current budget and funding sources. Then the board began a lively discussion of possible new sources of funds, from traditional grants and funding appeals, to creating a business model that would place a monetary value on the information provided by the Oregon online Atlas.

At our next meeting we will have another chance to lend our support for the Project via exchange of ideas and action items that ensure the long-term, sustainable future for the Project.

OFP ADVISORY BOARD MEMBERS:

Gail Baker, Eugene
Assistant Professor of Biology at Lane Community College (LCC), Gail's recent activities at LCC are stewardship of the Rowe-Love Herbarium, native landscape project surrounding the Science-Math Building and preservation of the native mixed conifer-oak forest on campus. Gail has taught introductory plant science courses for non-majors and currently teaches majors biology and botany courses that emphasize research, especially phenology. These courses foster the importance of becoming scientifically literate citizens and providing a foundation for students who wish to pursue science related careers. Gail's activities are highlighted on the LCC Biology web site at *www.lanecc.edu/science/biology/NaturalResources.html*

Lynda Boyer (Executive Secretary), Salem
Native Plant Manager and Restoration Biologist for Heritage Seedlings Inc., Lynda has a Master's degree in Plant Biology from Portland State University. Since 2001, Lynda has enlarged the native plant program at Heritage to encompass the production of over 100 species of native Willamette Valley prairie grasses and forbs for seed which is used on numerous restoration projects throughout the valley. She also facilitates restoration of 250 acres of oak and prairie habitat and 50 acres of riparian habitat on company properties. Sharing knowledge is a core value of the company. Their website can be visited at *www.heritageseedings.com* .

Jeff Cook (Vice President), Eugene
Senior Applications Developer for Lane Council of Governments (LCOG), Jeff has developed web-based and Microsoft Access-based applications for LCOG, the Cities of Eugene and Springfield, the Metropolitan Policy Organization, Lane Transit District and Central Lane 911, among others. As a volunteer, Jeff has helped develop websites for the Oregon Flora Project and Ridgeline Montessori Charter School.

Sam Friedman, Roseburg
Botanist, U.S. Fish and Wildlife Service, Roseburg District, Sam received his Masters degree in 1996 from Arizona State. In his current position, he specializes in endangered species recovery for the district, assisting in recovery plan development for numerous vernal pool and wet meadow species in Southwestern Oregon. He has been president of the Umpqua Valley Chapter of NPSO and served a term on the NPSO board of directors.

Aaron Liston, Corvallis
Dr. Liston has been a Botany professor and Herbarium Director at OSU since 1991. Aaron has conducted systematic studies in several plant genera, including *Astragalus, Lupinus, Thalictrum, Trifolium* and *Pinus*. His current research focuses on the application of genomic approaches to phylogeny and speciation in *Asclepias* and *Fragaria.*

Dan Luoma, Corvallis
Dan is a Professor of Forest Mycology in the Department of Forest Ecosystems and Society at OSU. He received his M.S. and Ph.D. in Ecological Plant Geography from OSU. In 2004, Dan was honored as a Distinguished Alumnus by Lane Community College, Eugene, Oregon. The award recognizes its recipients for their achievements in their chosen profession and their service to the community. Dan's research covers several integrated research projects in the field of Forest Mycology and he teaches a variety of mycology courses at OSU. Outreach to forestland owners, managers, and users (for example, through the Swiss Needle Cast Co-op) is also an important aspect of his educational endeavors.

Carol Savonen (President), Philomath
Retired (emerita) from OSU, Carol became interested in science writing while working as a field biologist and environmental educator for more than a decade. She was on the Faculty at OSU for 20 years as a science and garden writer and, currently, writes a weekly gardening column for the Salem *Statesman Journal.*

Joan Seevers, Ashland
Joan has been a District and state botanist for the Bureau of Land Management (BLM) for 33 years. Throughout her tenure Joan has worked extensively on conservation and recovery of endangered species, development of native plant material, and native plant community/habitat management. Currently, she is organizing the field trips for this summer's NPSO annual conference.

Paul Slichter, Portland
A retired biology teacher at Gresham High School, Paul is now a self-proclaimed "nature bum." His favorite travels take him mostly

See Advisory Board, page 14

In Search of the Willamette Valley Ponderosa Pine

by Stephen C. Meyers and Kyle A. Leonard

If one were to ask a hypothetical, local botanist for a list of ten native plant species commonly associated with the Willamette Valley, obvious candidates come to mind. Among these obvious choices might be the ubiquitous Douglas-fir and salal. Or perhaps rare endemics such as Nelson's checker-mallow and Kincaid's lupine. My own personal list, if generated five years ago, would have likely included these species. Yet absent from my list, and probably absent from that of our hypothetical botanist would have been ponderosa pine. I, like many other local botanists, assumed that the valley's occasional, scattered ponderosa pine originated from seeds collected elsewhere. In this I was mistaken.

My initial understanding of, and resultant interest in, valley ponderosa pine was spawned by a paper published in *Northwest Science* by Hibbs et al. (2002). In this paper the authors document the fact that ponderosa pine was an abundant component of the valley ecosystem from at least 11,000 years ago until the mid-1800s. The authors further suggest that the reduction of ponderosa pine populations was largely caused by land use patterns (e.g. farming, housing developments, fire suppression), and the subsequent ecological succession of species such as Douglas-fir, following the influx of immigrants in the past 160 years.

Despite today's lack of many large stands of ponderosa pine in the Willamette Valley, local interest in this species does exist. A good example of this is the Willamette Valley Ponderosa Pine Conservation Association (WVPPCA). The mission of this group is not only to conserve the remaining populations of valley ponderosa pine, but also to expand the number of native trees planted in Willamette Valley tree plantations. This latter undertaking is an effort to encourage and capitalize on the growing "buy local" movement.

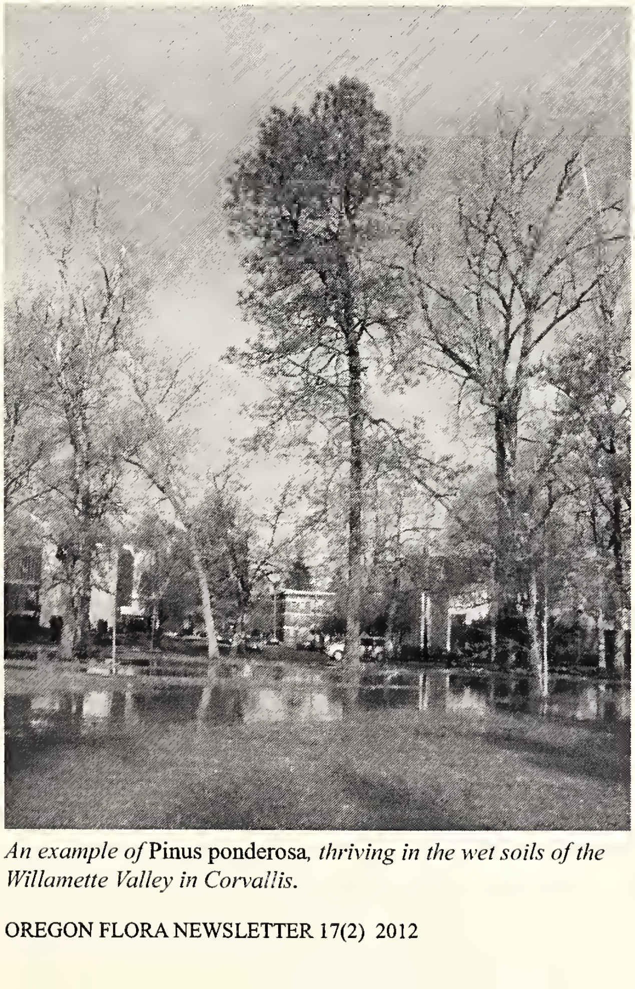

Photo: Stephen Meyers.

An example of Pinus ponderosa, *thriving in the wet soils of the Willamette Valley in Corvallis.*

As part of their conservation efforts in 2002 the WVPPCA undertook a project to document potential native stands of ponderosa pine in the Willamette Valley. While they did not claim to have located all stands, their survey did locate over 950 stands ranging in size from one to over 100 trees.

When contacting the WVPPCA to obtain this data, I became aware of a local interest in formally naming valley ponderosa pine. Several individuals I talked to voiced a question I also asked, namely, "Has the ecology of the Willamette Valley, being different from other regions in which ponderosa pine is typically found (as a result of rainfall and temperature), resulted in the evolution of a taxon, locally, that is morphologically and/or genetically unique?"

Enthused and encouraged by our shared interest Kyle Leonard and I, armed with the stand data obtained from the WVPPCA, began visiting Willamette Valley stands in 2007, collecting specimens and recording morphological data. During the subsequent five years we amassed data from 50 populations (as well as data from many pine populations outside the valley). Initially we focused on the most obvious and easily recordable traits, such as needle length and width, cone length and width, tree height and bark characteristics.

While we were quickly able to find morphological characteristics unique to pines found west of the Cascade and Sierra Nevada mountain ranges, including the Willamette Valley, we found none completely unique to the Willamette Valley alone. At this point we extended our morphological data gathering to less obvious characters, such as cone shape, needle color, cone prickle position, cone scale color and cone scale length-to-width ratios. Unfortunately, these traits also proved inadequate to differentiate the valley pines from other west side populations in southern Oregon and California.

This, however, does not mean the end of research concerning valley ponderosa pine. Ann Willyard (a former graduate student at Oregon State University and currently a professor at Hendrix College in Arkansas), along with her student Kristen Finch, are analyzing ponderosa pine DNA from the Willamette Valley. Although the work is ongoing and not yet completed, thus far they have found some differences between valley ponderosa pine and those from outside the region. Whether this work will result in formal description of the variety remains to be seen.

Coincidently, as Kyle and I were collecting data over the past few years, two California botanists were doing similar research on ponderosa pine (Haller and Vivrette, 2011). However, their study area encompassed not only the Willamette Valley, but the entire coast of North America west of the Cascades and Sierra Nevadas. Their work has

See Ponderosa, page 15

Project News

by Linda Hardison

If the work of the Oregon Flora Project were compared to running a marathon, I would assert that we are well into the middle of the race—ticking off the miles, maintaining our pace, and strategically planning the steps to move us toward a winning finish.

We have completed the conversion of our databases to postgreSQL, and are now able to seamlessly update the information in our website tools. Because we perform a number of quality control steps on all data we release, there will always be a delay between the completion of our latest research and its incorporation into the online Checklist, Atlas, or Photo Gallery; our database conversion has now shortened that time period. Look on our website for an updated version of the Checklist and herbarium specimen images of almost 600 unique taxa at the end of this month!

The formation of an advisory board has now become a long-anticipated accomplishment. It was a great honor to have our board members accept the invitation to participate, and to recognize the expertise and enthusiasm each brings in support of the Oregon Flora Project. Enjoy reading about these amazing people in Lynda Boyer's article elsewhere in this issue. The advisory board meets three times each year with members serving two-year terms.

How have you used information from the Oregon Flora Project? Here are some recent applications that we are aware of:

- The Eugene Chapter of the North American Butterfly Association is developing a booklet to aid in the identification of Buckwheat Blue butterflies. There are unique associations of butterfly species with buckwheat (*Eriogonum*) species, which are used as a host plant and/or nectar source.
- The USDA-Natural Resources Conservation Service sponsors interns in many divisions of their agency. Last summer, intern Bridget Chipman (a former OFP student worker) developed the publication "A Guide to Transitional Wetland Plants and Common Weeds of the Willamette Valley" as her capstone project. The OFP Atlas and Photo Gallery provided critical information for this work.
- An Oregon State University course in Dendrology, newly adapted as an online course, will be using OFP images in its curriculum. Instructors and researchers throughout the Colleges of Forestry, Agriculture, and Science use OFP data to support their teaching and research.

The Oregon Flora Project is making its social media debut! We now have a page on Facebook—look for "Oregon Flora Project" within the Facebook search feature (be persistent!), "like" us, and share your thoughts.
Manuscripts of floristic treatments for the *Flora of Oregon* are steadily coming in, and we are seeking reviewers. Skills needed to assist in this task include a familiarity in the use of dichotomous keys, and (at minimum) a general knowledge of your chosen plant group. If you would like to help, please contact Dr. Stephen Meyers at *meyersst@science.oregonstate.edu.*

Advisory Board, continued from page 12

to the Gorge and Central and Eastern Washington. There he hones his botanical skills generating plant lists for these special wild places and indulges his hobby of wildlife and plant photography. He also spends much of his time as a rare plant volunteer for Rare Care.

Rob Soreng, Washington DC
Research Associate, Department of Botany, Smithsonian National Museum of Natural History, Robert grew up in Eugene, earned a BS at OSU, and was inspired to study grasses by Ken Chambers . His principal research interest is grass taxonomy, in particular, the genus *Poa*. He has conducted molecular research on relationships among grasses at all hierarchical levels. He now devotes his time to studying these plants in the herbarium and field.

José Vega, Corvallis
Marketing Manager for Datalogic Group, José's educational background is in engineering. His experience ranges from owning and operating an engineering and manufacturing company to his current position as worldwide manager of field marketing for a mobile computer manufacturer. He operates a small organic berry farm on his acreage in Corvallis.

Cyclamen, *continued from page 10*

1. Tubers usually over 4 cm in diameter; flowers appearing in late summer or autumn before or after leaves have developed.

  2. Flowers appearing before leaves have developed; tubers rooting from tops or sides; petals white to purple.. *C. hederifolium*

  2' Flowers appearing after leaves have developed; tubers rooting from base; petals pink to reddish ... *C. cilicium*

1' Tubers less than 3.5 cm in diameter, rooting from all sides or base; flowers appearing at various times of the year after leaves are developed.

    3. Flowers appearing in summer to autumn; tubers irregular shaped, rooting from all sides; petals pink to purple, 15-20 mm long .... *C. purpurascens*

    3' Flowers appearing in late winter to spring; tubers sub-globose or depressed-globose, rooting from base; petals dark purple, 7-15 mm long .... *C. coem*

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Ponderosa, continued from page 13

resulted in the description of a variety of ponderosa pine within the "Pacific portion" of the overall species' natural range, which includes the Willamette Valley. Mirroring the range of the variety, Haller and Vivrette have chosen to use the name *Pinus ponderosa* var. *pacifica*. Unfortunately, this name violates the priority rule of botanical nomenclature. The name that should be used is *P. ponderosa* var. *benthamiana* (name previously applied in 1876 and typified in 1996, to pines in western California). But that is another story for a future article.

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How can I contribute?

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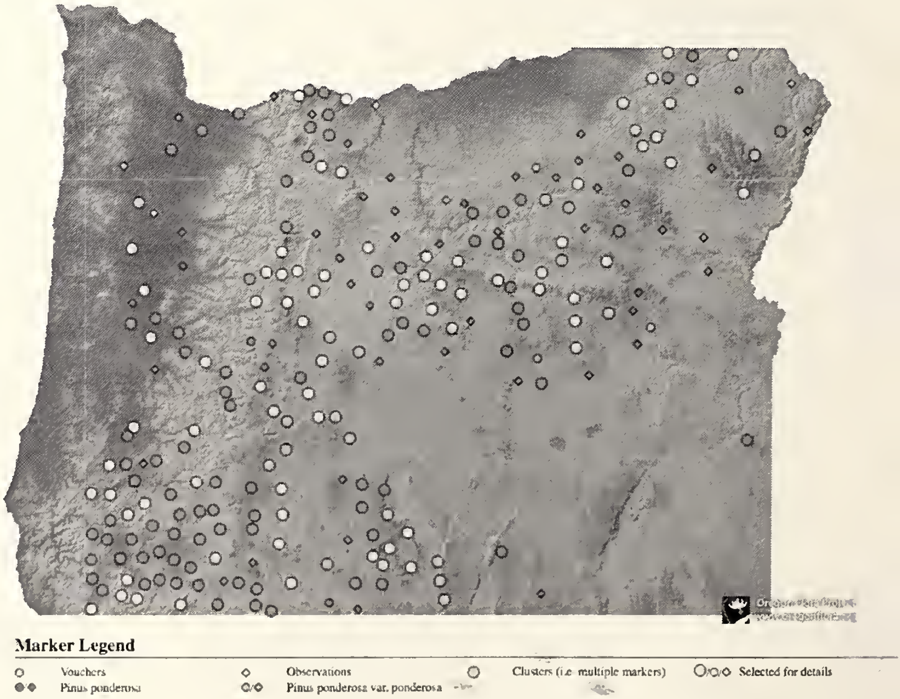
Did you know?

- The name *Erigeron* is derived from the Greek [eri =early, and geron=old man], presumably referring to the grey pappus that forms in many species relatively quickly after flowering.
- The needles of ponderosa pine, like all pine species, contain high amounts of vitamins A and C. In Scandinavia, a tea made from pine needles ("tallstrunt") was historically drunk during the long northern winters to prevent scurvy.
- The science of botany has a long tradition of naming plant taxa (e.g. *Erigeron stanselliae*) after accomplished and respected botanists. Linnaeus, however, once broke from this custom by naming a species in the Aster family--*Siegesbeckia orientalis*--in "honor" of a vocal critic of his work (Johann Georg Siegesbeck). Linnaeus himself thought of this plant as a small, ugly, odorous weed.


Marker Legend
○ Vouchers
◇ Observations
○ Clusters (i.e. multiple markers)
○/○/◇ Selected for details
●/◆ Pinus ponderosa
○/◇ Pinus ponderosa var. ponderosa

Distribution of *Pinus ponderosa*. From the Oregon Plant Atlas, *www.oregonflora.org/atlas.php*.